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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/16/2003

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EXAMINER

TRAN, DZUNG D

ART UNIT

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2613

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/685,580	Applicant(s) YE ET AL.	
	Examiner Dzung D. Tran	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-12, 16-18, 22-29, 33-35, 39-41, 45-52 and 57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-12, 16-18, 22-29, 33-35, 39-41, 45-52 and 57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☒ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

DETAILED ACTION

Specification

1. The finality of the last Office action is withdrawn in view of the newly discovered reference(s) to of Kim et al. US 2004/0202174 and Lee et al. US 2003/0133460.

Rejections based on the newly cited reference(s) follow.

Information Disclosure Statement

1. The prior art documents submitted by Applicant in the information disclosure statement (IDS) filed on 07/09/2009 and 07/15/2009 have been considered and made of record (note attached copy of forms PTO-1449).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "if the first and second interfaces are located in a single optical line terminal" in claims 12, 18, 29, 35, 41 and 52 is vague and indefinite since "if the first and second interfaces are located in a single optical line terminal" could mean the OLT may have one interface or may have both interfaces. Every limitation must be positively identified.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-7, 39-40, 45-47 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyke et al. US Patent no. 6,351,582 in view of Foltzer US patent no. 6,567,579 and further in view of Kim et al. US 2004/0202174.

Regarding claims 5, 45 and 57, Dyke discloses in Figure 7, a method of detecting and recovering a failure in a protected single-fiber passive optical network, wherein the protected single-fiber passive optical network comprises a first interface 701 including a first transmitter Tx and a first receiver Rx, a second interface 702 including a second transmitter Tx and a second receiver Rx, an optical fiber 711 connecting said interfaces, a plurality of passive nodes 720, 730, 740, 750 between said interfaces, a plurality of optical network units 721, 731, 741, 751, connected to said plurality of passive nodes, the method comprising the steps of:

sending optical signals from said first interface 701 via said optical fiber 711 to said second interface 702 (Figure 7, col. 12, lines 21-22);

detecting at said second interface a fault arising from said first interface (col. 6, lines 1-4; col. 12, lines 23-27); and

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in response to detection, switching on said second transmitter of said second interface (col. 6, lines 13-18; col. 12, lines 23-27).

Dyke does not specially disclose for detecting at said second interface a fault arising from said first interface based on signal degradation in power level.

Foltzer discloses in col. 7, lines 26-38, for monitoring the fault of the optical system base on signal degradation in power level (i.e., quality degradation is detect).

At the time of the invention was made, it would have been obvious to an artisan to implement the well known method for monitoring the fault of the optical system base on signal degradation in power level taught by Foltzer in the optical system of Dyke. One of ordinary skill in the art would have been motivated to do that in order to determine the fault in the optical system. Thus, it enhances the optical system reliability.

The combination of Dyke and Foltzer does not disclose for synchronizing at least some of the plurality of optical network units with the second interface and measuring round trip delays between the second interface and optical network units attached to the second interface.

Kim discloses a passive optical network (PON) wherein the time slots are synchronized to at least some of ONUs (paragraphs 0020, 0025, 0047) and measuring round trip delays between the OLT and optical network units ONUs (paragraphs 0012, 0018, 0031, 0032).

At the time of the invention was made, it would have been obvious to an artisan to include the teaching of Kim in the system of Dyke and Foltzer that is synchronizing

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at least some of the plurality of optical network units with the OLT and measuring round trip delays between the second interface and optical network units attached to the OLT. One of ordinary skill in the art would have been motivated to do that in order to avoid the data that transmit from the plurality of ONUs collide with each other once the data are coupled onto the single fiber.

Regarding claims 6 and 46, Dyke discloses for switching on said second transmitter of said second interface occurs when the power level of said optical signals drops below a predetermined threshold value (col. 12, lines 37-43).

Regarding claims 7 and 47, Dyke discloses for switching off said second transmitter if the power level increases above said predetermined threshold value (col. 8, lines 63-65).

Regarding claim 39, Dyke discloses in Figure 5 an interface apparatus for a protected single-fiber passive optical network, the interface apparatus comprising:

- a first interface 514 including a first transmitter Tx 1500 coupled to a fiber for transmitting optical signals on a first wavelength and a first receiver Rx 1300 coupled to said fiber for receiving optical signals on a second wavelength;

- a second interface 515 including a second transmitter Tx 1300 coupled to said fiber for transmitting optical signals on the second wavelength and a second receiver Rx 1500 coupled to said fiber for receiving optical signals on the first wavelength;

- a detector Rx for detecting a fault arising from at least one optical network unit (col. 6, lines 1-4; col. 12, lines 23-27); and

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a transmitter Tx for sending to said second interface a message to switch on said second transmitter of said second interface (col. 6, lines 13-18; col. 12, lines 23-27).

Dyke does not specially disclose for detecting in said first interface that signals are not received from at least one optical network unit.

Foltzer discloses in col. 7, lines 26-38, for monitoring the fault of the optical system base on detecting in said first interface that signals are not received from at least one optical network unit (i.e., fiber breakage fault). At the time of the invention was made, it would have been obvious to an artisan to implement the well known method for monitoring the fault of the optical system base on detecting in said first interface that signals are not received from at least one optical network unit (i.e., fiber breakage fault) taught by Foltzer in the optical system of Dyke. One of ordinary skill in the art would have been motivated to do that in order to determine the fault in the optical system. Thus it enhances the optical system reliability.

The combination of Dyke and Foltzer does not disclose for synchronizing at least some of the plurality of optical network units with the second interface and measuring round trip delays between the second interface and optical network units attached to the second interface.

Kim discloses a passive optical network (PON) wherein the time slots are synchronized to at least some of ONUs (paragraphs 0020, 0025, 0047) and measuring round trip delays between the OLT and optical network units ONUs (paragraphs 0012, 0018, 0031, 0032).

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At the time of the invention was made, it would have been obvious to an artisan to include the teaching of Kim in the system of Dyke and Foltzer that is synchronizing at least some of the plurality of optical network units with the OLT and measuring round trip delays between the second interface and optical network units attached to the OLT. One of ordinary skill in the art would have been motivated to do that in order to avoid the data that transmit from the plurality of ONUs collide with each other once the data are coupled onto the single fiber.

Regarding claim 40, Dyke discloses wherein: said second interface is configured to switch off said second transmitter of said second interface if said detecting means detects that a number of optical network units from which signals are not received increases (col. 8, lines 63-65).

6. Claims 8-11 and 48-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyke et al. US Patent no. 6,351,582 in view of Foltzer US patent no. 6,567,579 and Kim et al. US 2004/0202174 and further in view of Tokita et al. US publication no. 2002/0093714.

Regarding claims 8-11 and 48-51, the combination of Dyke, Kim and Foltzer discloses all the limitations except for wherein said second interface is configured to keep said second transmitter switched on if the power level increases above said predetermined threshold value and wherein said second interface is configured to switch said second transmitter off and again on in order to verify that a cable is still broken and wherein said second interface is configured to switch off said second

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transmitter if detecting with said detector an abrupt change in the power level after switching on said second transmitter or switching on said second transmitter again if the power level decreases below said predetermined threshold value.

Tokita discloses an optical apparatus comprises a switch circuit for switching the optical transmitter On/Off based on the comparison between the source voltage and the predetermined voltage (abstract).

At the time of the invention was made, one of ordinary skill in the art would have been include the switching circuit taught by Tokita in the combination of Dyke, Kim and Foltzer. One of ordinary skill in the art would have been motivated to do that in order to allow the technician or user to monitor and maintenance the system. Thus, it improves the optical system reliability.

7. Claims 12, 16-18, 22-24, 29, 33-35, 41 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyke et al. US Patent no. 6,351,582 in view of Foltzer US patent no. 6,567,579 and further in view of Lee et al. US 2003/0133460.

Regarding claims 12, 16, 18, 22, 29, 33, 35, 41 and 52, Dyke discloses in Figure 7, a method of detecting and recovering a failure in a protected single-fiber passive optical network, wherein the protected single-fiber passive optical network comprises a first interface 701 including a first transmitter Tx and a first receiver Rx, a second interface 702 including a second transmitter Tx and a second receiver Rx, an optical fiber 711 connecting said interfaces, a plurality of passive nodes 720, 730, 740, 750

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between said interfaces, a plurality of optical network units 721, 731, 741, 751, connected to said plurality of passive nodes, the method comprising the steps of:

sending optical signals from said first interface 701 via said optical fiber 711 to said second interface 702 (Figure 7, col. 12, lines 21-22);

detecting at said second interface a fault arising from said first interface (col. 6, lines 1-4; col. 12, lines 23-27); and

in response to detection, switching on said second transmitter of said second interface (col. 6, lines 13-18; col. 12, lines 23-27).

Dyke does not specially disclose for detecting at said second interface a fault arising from said first interface based on signal degradation in power level.

Foltzer discloses in col. 7, lines 26-38, for monitoring the fault of the optical system base on signal degradation in power level (i.e., quality degradation is detect).

At the time of the invention was made, it would have been obvious to an artisan to implement the well known method for monitoring the fault of the optical system base on signal degradation in power level taught by Foltzer in the optical system of Dyke. One of ordinary skill in the art would have been motivated to do that in order to determine the fault in the optical system. Thus, it enhances the optical system reliability.

The combination of Dyke and Foltzer does not disclose for starting an auto-discovery process to register affected optical network units, in response to result of the auto-discovery process, updating an internal routing table of the OLT and sending affected downstream traffic of the affected ONUs using the second interface.

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Lee discloses an auto-discovery process to register affected optical network units, in response to result of the auto-discovery process, updating an internal routing table of the OLT and sending affected downstream traffic of the affected ONUs (paragraphs 0022, 0028, 0034, 0070, 0089).

At the time of the invention was made, it would have been obvious to an artisan to include the auto-discovery process to register affected optical network units, in response to result of the auto-discovery process, updating an internal routing table of the OLT and sending affected downstream traffic of the affected ONUs taught by Lee in the combination of Dyke and Foltzer. One of ordinary skill in the art would have been motivated to do that in order to allow the ONU synchronized with the OLT to identify a transmission start time of an initial registration request frame and a transmission time length included in a grant frame and allowing the ONU to transmit the initial registration request frame to the OLT after a random delay in order to avoid collision of initial registration request frames transmitted from the ONUs at the transmission time of the initial registration request frame (paragraph 0020 of Lee)

Regarding claim 23, Dyke discloses for switching on said second transmitter of said second interface occurs when the power level of said optical signals drops below a predetermined threshold value (col. 12, lines 37-43).

Regarding claim 24, Dyke discloses for switching off said second transmitter if the power level increases above said predetermined threshold value (col. 8, lines 63-65).

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Regarding claim 34, Dyke discloses wherein: said second interface is configured to switch off said second transmitter of said second interface if said detecting means detects that a number of optical network units from which signals are not received increases (col. 8, lines 63-65).

8. Claims 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyke et al. US Patent no. 6,351,582 in view of Foltzer US patent no. 6,567,579 and Lee et al. US 2003/0133460 and further in view of Tokita et al. US publication no. 2002/0093714.

Regarding claims 25-28, the combination of Dyke, Lee and Foltzer discloses all the limitations except for wherein said second interface is configured to keep said second transmitter switched on if the power level increases above said predetermined threshold value and wherein said second interface is configured to switch said second transmitter off and again on in order to verify that a cable is still broken and wherein said second interface is configured to switch off said second transmitter if detecting with said detector an abrupt change in the power level after switching on said second transmitter or switching on said second transmitter again if the power level decreases below said predetermined threshold value.

Tokita discloses an optical apparatus comprises a switch circuit for switching the optical transmitter On/Off based on the comparison between the source voltage and the predetermined voltage (abstract).

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At the time of the invention was made, one of ordinary skill in the art would have been include the switching circuit taught by Tokita in the combination of Dyke, Lee and Foltzer. One of ordinary skill in the art would have been motivated to do that in order to allow the technician or user to monitor and maintenance the system. Thus, it improves the optical system reliability.

Response to Arguments

9. Applicant's arguments with respect to claims 5-12, 16-18, 22-29, 33-35, 39-41, 45-52 and 57 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung D Tran whose telephone number is (571) 272-3025. The examiner can normally be reached on 9:00 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vanderpuye Kenneth, can be reached on (571) 272-3078. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dzung Tran
07/22/2009

/Dzung D Tran/

Primary Examiner, Art Unit 2613